

SAVITSKIY, Ye.M., doktor khim. nauk, otv. red.; RYABCHIKOV, D.I., doktor khim. nauk, red.; BIBIKOVA, V.I., doktor khim. nauk, red.; TYLKINA, M.A., kand. tekhn. nauk, red.; POVAROVA, K.B., inzh., red.; MAKARENKO, M.G., red. izd-va; SIMKINA, G.S., tekhn. red.

[Rhenium; transactions] Renii; trudy. Moskva, Izd-vo Akad. nauk SSSR, 1961. 278 p. (MIRA 15:1)

1. Vsesoyuznoye soveshchaniye po probleme reniya, 1958. (Rhenium)

S/137/62/000/001/229/237
A154/A101

AUTHORS: Ryabchikov, D. I., Ryabukhin, V. A.

TITLE: The present state of the analytical chemistry of the rare-earth elements scandium and yttrium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 11, abstract 1K68 (V sb. "Metody opredeleniya i analiza redk. elementov", Moscow, AN SSSR, 1961, 128-181)

TEXT: This review gives methods for the following: Separation of rare-earth elements from soils and rocks for X-ray-spectral analysis... X-ray-spectral quantitative determination of individual rare-earth elements... Spectral determination of rare-earth elements separated from rocks. Spectrochemical method of determining individual rare-earth elements. Spectral determination of Sc in ores and products of reprocessing of the latter. Photometric determination of individual rare-earth elements in ores and minerals after chromatographic separation on paper. Photometric determination of the total amount of rare-earth elements in ores and rocks. Determination of the total amount of rare-earth elements in phosphorites. Spectrophotometric determination of Pr, Nd, Ho, Er and

Card 1/2

S/137/62/000/001/229/237
A154/A101

The present state of the analytical ...

Tu without preliminary separation. Spectrophotometric determination of rare-earth elements of the cerium group. Flame-photometric determination of La, Eu, Yb and Y in an amount of oxides of rare-earth elements. Fluorescent determination of Eu in oxides of rare-earth elements. Determination of Yb in concentrates of rare-earth elements of the yttrium group. Trilonometric determination of Sc in concentrates. Trilonometric determination of the total amount of rare-earth elements. Colorimetric determination of Ce. Separation of Ce from Cr-Ni-alloys for X-ray spectral analysis. Photocolorimetric determination of Ce in Ni-based alloys. Separation of rare-earth elements from Mg-alloys for X-ray spectral determination. Neutroactivation determination of rare-earth elements. Determination of Yb in the presence of large amounts of Er by the method of oscillographic polarography. Spectral determination of Pb, Sn, Cd and Bi in Ce and La. Flame-photometric determination of Ca in salts of rare-earth elements. There are 206 references.

I. Golubeva

[Abstracter's note: Complete translation]

Card 2/2

S/137/62/000/001/230/237
A154/A101

AUTHORS: Ryabchikov, D. I., Gerlit, Yu. B.

TITLE: The present state of the analytical chemistry of rhenium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 11, abstract 1K69
(V sb. "Metody opredeleniya i analiza redk. elementov". Moscow, AN SSSR, 1961, 629-662)

TEXT: This review gives methods for the following: Determination of Re in rocks. Extraction-photometric determination of Re with methyl violet. Colorimetric determination of Re after extraction by methyl ethyl ketone. Photometric determination of Re in Mo-containing products. Gravimetric determination of Re in a W-Re-Alloy. Colorimetric determination of Re in Ta-Re, W-Re and Mo-Re alloys. Determination of Re in Mo-Re and W-Re alloys after preliminary separation of the Re by the chromatographic method. Spectrophotometric determination of Re in alloys on various bases. Determination of Re by the differential spectrophotometric method. Potentiometric determination of Re in alloys. Spectral determination of Sb, Bi, Cd, Pb and Sn in metallic Re. Determination of admixtures of Na and K in Re preparations by the flame-photometry method.

Card 1/2

The present state of ...

S/137/62/000/001/230/237
A154/A101

Colorimetric determination of admixtures in metallic Re. There are ...
146 references.

N. Gertseva

[Abstracter's note: Complete translation]

Card 2/2

S/007/61/000/004/002/004
B107/B207

AUTHORS: Ryabchikov, I. D., Solov'yeva, B. A.

TITLE: Geochemistry of rubidium and lithium in micaceous pegmatites of Northern Kareliya

PERIODICAL: Geokhimiya, no. 4, 1961, 316-323

TEXT: The pegmatite deposits of Tedino and Kheto-Lambino, as well as some samples of the Bol'shoy Chkalov deposit were studied. Rubidium, lithium, and potassium were flame photometrically determined in rocks and individual minerals. The accuracy of Rb determination in micas, microcline, and gneisses and of Li in micas and gneisses was $\pm 5\%$. In samples with lower Rb and Li contents, the accuracy is less high. A comparison between the rubidium- and potassium contents shows the following (Fig. 2): No noteworthy differentiation between rubidium and potassium occurs, except for plagioclase. It is assumed that, up to a limited extent, Na can be replaced by K, but not by Rb. The K/Rb ratio in pegmatite and in the surrounding rocks is the same; this indicates that the pegmatites were built up in the course of ultrametamorphism. In the Tedino deposit, the

Card 1/4

S/007/61/000/004/002/004
B107/B207

Geochemistry of...

K/Rb ratio averages 240, in the Kheto-Lambino deposit, 400. Studies of the contact with adjacent rock showed that the latter has not been penetrated by Rb and K (Fig. 1). The lithium content of the adjacent rock is higher than that of pegmatite. The authors thank K. K. Zhironov who directed the work, as well as D. N. Ivanov and V. I. Lebedev who assisted in analyzing. There are 2 figures, 4 tables, and 18 references: 12 Soviet-bloc. The three references to English-language publications read as follows: H. Ramberg. Bull. Geol. Soc. Amer. 67, no. 2, 1956; S. R. Taylor, C. H. Emeleus, C. S. Exley. Geochim. et Cosmochim. Acta 10, N 4, 224, 1956; S. R. Taylor, K. S. Heier. Geochim. et Cosmochim. Acta 13, N 4, 1958.

ASSOCIATION: Kafedra geokhimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Department of Geochemistry of the Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 20, 1960

Card 2/4

S/078/61/006/003/014/022
B121/B208

AUTHORS: Ryabchikov, D. I., Zarinskiy, V. A., Nazarenko, I. I.

TITLE: Composition of the rhenium-thiocyanate complex compound

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 3, 1961, 641-646

TEXT: V. M. Tarayan and co-workers (Refs. 6,7) have studied the composition of the complexes of rhenium with thiocyanate. V. M. Tarayan (Ref. 7), D. I. Ryabchikov and A. I. Lazarev (Ref. 8) determined the number of SCN⁻ addenda. Their results are in good agreement with the data obtained by I. G. F. Druce (Ref. 1). D. I. Ryabchikov and A. I. Lazarev detected the anionic character of rhenium-thiocyanate complexes, by ion exchange and suggested the following formula for the potassium salt: $K[ReO(SCN)_4]$. It may be seen from publications that there is no agreement on the composition and valence of rhenium-thiocyanate complexes. The authors studied this problem by electrochemical reduction with potassium perrhenate on a tungsten cathode in HCl. The electrochemical reduction of potassium perrhenate was

Card 1/3

S/078/61/006/003/014/022
B121/B208

Composition of the rhenium-thiocyanate...

carried out in a special cell designed by V. A. Zarinskiy. The rate of electrolytic reduction of perrhenate in HCl depends on the cathode material. Reduction of $\text{Re}^{\text{VII}} \rightarrow \text{Re}^{\text{V}}$ is possible in 7 - 9 N HCl. The sudden potential jump on the tungsten cathode from + 0.1 to 0.3 v, referred to a saturated calomel electrode, indicates the end of the reduction of $\text{Re}^{\text{VII}} \rightarrow \text{Re}^{\text{V}}$. The reduction is checked by titration with a cerium (IV) sulfate solution with addition of an excess of Fe^{3+} . The reaction of pentavalent rhenium with thiocyanate was studied spectrophotometrically, and the effect of the concentration of rhenium (V) and thiocyanate in the solution on the completeness of rhenium-thiocyanate complex formation was investigated. It was found that the formation of the rhenium complex begins when raising the rhenium concentration to 0.002 mole and increases with increasing rhenium and thiocyanate concentrations. The necessity of higher concentrations of pentavalent rhenium and thiocyanate ions for the formation of the pentavalent rhenium-thiocyanate complex indicates that the colored complex is largely dissociated. The anionic character of the thiocyanate complex was confirmed by determining the transference number. The results are in

Card 2/3

2
S/078/61/006/005/001/015
B121/B208

AUTHORS: Kargin, V. A., Lastovskiy, R. P., Matveyeva, T. A.,
Ryabchikov, D. I., Zarinskiy, V. A., and Farafonov, M. M.

TITLE: Purification of titanium dioxide and meta-titanic acid by the
method of high-voltage electrodialysis

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 5, 1961, 1017 - 1019

TEXT: A method of purifying titanium dioxide and meta-titanic acid by
high-voltage electrodialysis was devised. The laboratory set-up consists
of a d-c source (capacity 5 - 5.7 KW), an electrodialyzer with five
chambers of organic glass and control equipments for measuring amperage
and voltage. The electrode spacing is 10 - 12 cm. The titanium dioxide
to be purified is put into the central chamber of the electrodialyzer in
the form of a suspension. Purification from the impurities Mg, Fe, Al,
Ca, Sb, Pb, Sn, Cd, Bi, and Cu is carried out in an ionic current of Cl^-
and NO_3^- at maximum electrode potential. To remove SiO_2 from titanium di-
oxide, a dilute KOH solution is added in the anode chamber of the dialyzer,

Card 1/3
2/

S/078/61/006/005/001/015
B121/B208

Purification of titanium ...

which reduces the SiO_2 content from 0,3 to 0,03 %. Traces of Hf, Nb, and Ta are separated from TiO_2 by conversion to oxalate complexes. Purification was examined by means of the quartz spectrographs of the MCT-22 (ISP-22) or MCT-28 (ISP-28)-type. The spectrographic method for the determination of Nb, Ta, Hf, and Cr is precisely described. Titanium dioxide purified by high-voltage electrodialysis, and meta-titanic acid have the following contents of impurities: Zr, Hf, Nb, Ta less than $1 \cdot 10^{-2}$ %, Mg - $5 \cdot 10^{-4}$ %, Si - $1 \cdot 10^{-3}$ %, Fe - less than $1 \cdot 10^{-4}$ %, Al - $3 \cdot 10^{-3}$ %, Ca - less than $1 \cdot 10^{-4}$ %, Sb - less than $1 \cdot 10^{-4}$ %, P - less than $1 \cdot 10^{-3}$ %, Cu - less than $1 \cdot 10^{-4}$ %, Sn - less than $1 \cdot 10^{-4}$ %, Cd - less than $1 \cdot 10^{-4}$ %, Pb - less than $1 \cdot 10^{-4}$ %. There are 4 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

Card 2/3

Purification of titanium ...

S/078/61/006/005/001/015
B121/B208

ASSOCIATION: Institut chistyykh khimicheskikh reaktivov
(Institute of Pure Chemical Reagents)
Institut geokhimii i analiticheskoy khimii im. V. I.
Vernadskogo Akademii nauk SSSR
(Institute of Geochemistry and Analytical Chemistry imeni
V. I. Vernadskiy of the Academy of Sciences USSR)

SUBMITTED: March 17, 1960

Card 3/3

S/078/61/006/005/007/015
B121/B208

AUTHORS: Ryabchikov, D. I., Zarinskiy, V. A., and Nazarenko, I. I.

TITLE: Electrolytic method of preparing trivalent rhenium compounds

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 5, 1961,
1138 - 1141

TEXT: The electrolytic reduction of potassium hexachloro-rhenate on the mercury cathode (platinum anode) in hydrochloric acid medium of different concentration was studied. The reduction of trivalent rhenium was examined by titration with cerium (IV) sulfate. In 1 - 2 N HCl solution Re^{III} is quantitatively oxidized to Re^{VII} by cerium (IV) sulfate consuming four equivalents of the oxidant. Titration in 8 N HCl consumes only one equivalent cerium (IV) sulfate, Re^{III} being oxidized to Re^{IV} . The stability of tetravalent rhenium compounds increases with increasing concentration of hydrochloric acid. A fine-crystalline precipitate was obtained with cesium salt from hydrochloric acid rhenium (III) solutions. The precipitate was filtered and washed out with small amounts of 2 N HCl, alcohol,

Card 1/2

Electrolytic method of ...

S/078/61/006/005/007/015
B121/B208

and ether. Analysis of the compounds with respect to rhenium gave 23.6 % (theoretical Re content in Cs_3ReCl_6 is 23.3 %). The valence of rhenium in Cs_3ReCl_6 was determined by cerium (IV) sulfate solution (0.074 N). Rhenium (III) was found to form a halogen complex. ReCl_6^{3-} with the coordination number 6. The following Soviet authors are mentioned in the original paper: Ref. 4: Myao Tsin-shen, V. G. Tronev, Zh. neorgan. khimii, 4, 1768 (1959); Ref. 6: see Ref. 4, page 2834; Ref. 12: V.V. Lebedinskiy, B. N. Ivanov-Emin. Zh. obshch. khimii, 13, 256 (1943). There are 3 figures, 1 table, and 22 references: 4 Soviet-bloc and 18 non-Soviet-bloc. The references to English-language publications read as follows: Ref. 10: O. W. Kolling, Trans.Kansas. Acad. Sci., 50, 3, 378 (1953); Ref. 13: N. F. Curtis, J. Fergusson, R. S. Nyholm, Chem. Ind.(London), 625 (1958), Chem. Abstrs, 53, 2919 (1959); Ref. 22: E. K. Mann, W. Davidson, J. Amer. Chem. Soc., 72, 2254 (1950).

SUBMITTED: June 3, 1960

Card 2/2

23596

55300

1160, 1273, 2203

S/075/61/016/003/007/007
B106/B208

AUTHORS: Ryabchikov, D. I. and Lazarev, A. I.

TITLE: Rhenium determination in alloys

PERIODICAL: Zhurnal analiticheskoy khimii, v. 16, no. 3, 1961, 366-367

TEXT: In the photometric determination of small rhenium amounts in alloys by the thiocyanate method (Ref. 1: Sendel Ye. B., Kolorimetrichekoye opredeleniye sledov metallov, Goskhimizdat, M., 1949) copper interferes by forming a sparingly soluble thiocyanate. In a previous paper (Ref. 2: Ryabchikov D. I., Lazarev A. I., Zh. analit. khimii 4, 228 (1955)) the authors had devised a method for the photometric determination of rhenium in solutions containing up to $2 \cdot 10^{-3}$ g-ions of copper per liter. In this method copper was bound by thiourea to a colorless complex. In the presence of high thiourea concentrations a complex of rhenium with thiourea is formed which shows other optical properties than the thiocyanate complex. In the present paper, the authors describe the rhenium determination in alloys which contain iron as the principal mass, and besides large amounts

Card 1/5

23596

S/075/61/016/003/007/007

B106/B208

Rhenium determination in alloys

of aluminum, manganese, nickel, and up to 15% copper. Determination was made by the thiocyanate method after separating the remaining components of the alloys. 0.1 g of the alloy is dissolved in a mixture of 5 ml hydrochloric acid (1:2) and 5 ml nitric acid (1:1) with slight heating. The solution is concentrated to a volume of 0.5-1 ml on a water bath. Concentrating must be carefully performed, as rhenium compounds are volatile from acid solutions. 5 ml of concentrated HCl is added to the residue, it is concentrated again, and this procedure is repeated once more. The residue is dissolved in 50 ml of distilled water and the solution is passed through a cation exchanger column at a rate of 4 ml/min. The rhenium passes over into the filtrate as an anion. A 50-ml burette was used as exchanger column, it was filled with 10 g of the KY-2 (KU-2) cationite, and had a glass-wool stopper at the lower end. The exchange resin was converted to the H-form prior to use by washing through the column with 100 ml of 2 N sulfuric acid, and then with 100 ml of distilled water. For complete elution of the rhenium anions, the column is washed with 150 ml of distilled water. The filtrate combined with the washings which now contains the total rhenium content of the specimen is diluted with distilled water to 250 ml in a graduated flask. The cations adsorbed on the exchanger are eluted with

Card 2/5

23596


S/075/61/016/003/007/007

B106/B208

Rhenium determination in alloys

200 ml of 4 N sulfuric acid; the cations can be determined in the acid solution. The described separation of rhenium from the other components of the alloy lasts up to 50 minutes. 5-10 ml of the rhenium solution in the graduated flask are filled into a 50-ml flask, and mixed with 20 ml of hydrochloric acid (1:1), 2 ml of a 50% potassium thiocyanate solution, and 2 ml of a 20% solution of $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ in concentrated hydrochloric acid.

After adding each of the above reagents, the solution is thoroughly mixed. The flask is made up to the mark with distilled water. After 10 minutes, the optical density of the solution is measured in an ФЭК-М (FEK-M) photoelectric colorimeter through a blue filter against distilled water as reference solution. The rhenium content is determined by a calibration curve plotted by means of standard solutions of pure potassium perrhenate in 1 N hydrochloric acid. To accelerate and to simplify the described rhenium determination, the direct photometric determination of rhenium with thiourea was used (Ref. 2). In acid solutions, thiourea forms, with rhenium compounds in the presence of reducing agents, a greenish complex compound whose absorption maximum lies in the shortwave band of the visible spectrum. The optical density of the solutions of the complex is directly



Card 3/5

Rhenium determination in alloys

23596
S/075/61/016/003/007/007
B106/B208

proportional to the rhenium concentration in a wide concentration range (5-160 μg of Re in 25 ml). The molar absorption coefficient of the complex is $6.2 \cdot 10^3$. At room temperature, the complex is only slowly formed. The opening up of the specimen and the evaporation of nitric acid takes place in the way mentioned above. The concentrated solution is then dissolved in 50 ml of distilled water, as above, and made up to 200 ml in a measuring flask. 25 ml of this solution are mixed with 10 ml of concentrated HCl in a 50-ml flask, and cooled. After addition of 10 ml of a 5% aqueous solution of thicurea and 2 ml of a 20% solution of $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ the flask is filled up with distilled water. The optical density of the solution is measured through a color filter with maximum transmissivity at 400 m μ . The table shows results of rhenium determinations in alloys by the two methods described. There are 1 table and 4 Soviet-bloc references.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy AS, USSR, Moscow)

SUBMITTED: March 14, 1960

Card 4/5

S/075/61/C16/000/000/000
B106/B147

AUTHORS: Ryabchikov, D. I., Gokhshteyn, Ya. P., and Kao Ts'ai-sheng

TITLE: Quantitative determination of uranium in ores by the method of oscillographic polarography

PERIODICAL: Zhurnal analiticheskoy khimii, v. 16, no. 6, 1961, 709-714

TEXT: The authors used oscillographic polarography for quantitative determination of uranium in ores without separation of accompanying elements. The composition of the background in polarographic determinations depends on how the ore was decomposed. The measurements were made in the oscillographic polarograph ГЕОХИ 2 М (ГЕОХИ 2 М). The polarographic cell consisted of a dropping mercury electrode and a saturated calomel reference electrode. The peak potentials on the oscillograms were obtained by a method described earlier (Ref. 19. Gokhshteyn Ya. P., Zh. analit. khimii 14, 458 (1959)). The authors developed a method for determining uranium in titanoniobium ores, carbonate ores, and ores of a high phosphorus and iron content. In analyses of titanoniobium tantalum ores and other ores soluble in concentrated phosphoric acid, the

Card 1/1

S/075/61/016/006/004/006
B106/B147

Quantitative determination ...

ore sample is dissolved in 85% H_3PO_4 by heating. After dilution with water, the solution is boiled with $K_2S_2O_8$ for the oxidation of uranium. After cooling, an aliquot portion of the solution is oscillographically polarographed at a constant voltage $U_{sc} = +0.17$ and a negative sawtooth voltage of -0.95 v (simple development with a pulse delay of 13 seconds after separation of the preceding drop). Such a determination takes less than 1 hr. Titanoniobium tantalum ores containing less than 2% of uranium can be decomposed by fusing with $K_2S_2O_7$ at $400-600^\circ C$. The melt is dissolved in water, mixed with 6-7 milliliters of 85% H_3PO_4 , and polarographed as described above. This determination takes about 2 hr. In ore decomposition by a mixture of HF and HCl or HF + HNO_3 , the residue is dissolved in 1 N HNO_3 . 3 milliliters of this solution is poured into the electrolyzer, and anodic polarization is carried out. $U_{sc} = +0.5$ v and a positive sawtooth voltage of $U_{sc} = 0.95$ v are applied to the cell. The polarogram of the anodic wave of uranium is obtained (simple development with a pulse delay of 10-13 seconds after separation of the preceding drop). When analyzing low-grade uranium carbonate and phosphate ores containing

Quantitative determination ...

S/075/61/016/006/004/006
B106/B147

high amounts of iron, the ore sample is decomposed four times by hydrofluoric and sulfuric acid. The residue is dissolved in 0.1 N H_2SO_4 mixed with hydrazine sulfate, boiled for a few minutes. After cooling, an aliquot portion of the solution is oscillographically polarographed at $U = +0.02$ v, $U_{\infty} = 0.95$ v, and simple development with a delay of 10-13 seconds after separation of the preceding drop. In the analysis of an arbitrary ore, the polarograms of the background, of the solution to be analysed, and of a solution with addition of a standard solution are transferred to a tracing paper. Subsequently, the currents are measured as usual (Ref. 19, see above). The content of uranium is calculated by the method of additions. The relative error of determination of the method described does not exceed $\pm 2\%$; concentrations of 0.02 mg U/milliliter can be measured. It is obvious that uranium can be quantitatively determined in some ores by oscillographic polarography without previous separation of accompanying elements. There are 5 figures, 3 tables, and 24 references: 20 Soviet-bloc and 4 non-Soviet. The reference to the English-language publications reads as follows: Harris W. E., Kolthoff I. M., J. Am. Chem. Soc. 67, 1484 (1945); 68, 1175 (1946); 69, 446 (1947).

Card 3/1

Quantitative determination ...

S/075/61/016/006/004/006
B106/B147

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy AS USSR, Moscow)

SUBMITTED: October 14, 1960

Table 3. Determination of uranium in ores.

Legend. (1) ore; (2) method of decomposition of the ore; (3) medium for the determination of uranium; (4) uranium found, %; (5) by the method described; (6) by a chemical method (titrimetrically according to Volkov (Ref. 23. Paley I. N., Materialy Mezhdunar. konferentsii po mirnomu ispol'zovaniyu atomnoy energii (Material of the International Conference on the Peaceful Use of Atomic Energy). Izd.-vo AN SSSR, M.-L., 1956, str. 266)); (7) radiometrically; (8) by X-ray spectrum analysis; (9) titanoniobium tantalum ore; (10) carbonate ore; (11) ore with high phosphorus content; (12) ore with high iron content; (13) direct dissolution in H_3PO_4 ; (14) fusing with $K_2S_2O_7$.

Card 4/1

23839

S/020/61/138/002/022/024
B103/E220

5 2100

1273, 1043, 1087

AUTHORS: Ryabchikov, D. I. and Korchemnaya, Ye. K.

TITLE: Monocitrate complexes of the rare earths

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 2, 1961, 397-398

TEXT: The first author studied the interaction between citrates of alkaline metals and salts of rare earths (Ref. 1: D. I. Ryabchikov, Ye. A. Terent'yeva, DAN, 58, 1373 (1947)) and continued this work. According to Ref. 1, the citrates are energetic complexing agents. Moreover, it has been proved (Ref. 2: D. I. Ryabchikov, Ye. A. Terent'yeva, Izv. AN SSSR, OKhN, 1949, no. 1, 44) that the coordination binding of the rare earths (RE) with the addenda is effected mainly by the atoms of oxygen or tertiary nitrogen. Rare earths show the coordination number 6. The authors proved, by means of several precipitating agents:

$PO_4^{3-} > F^- > C_2O_4^{2-} > OH^- > [Fe(CN)_6]^{4-}$ that the power of complex formation of the RE with any addendum increases from lanthanum to lutetium with decreasing ionic radius. The stability of the complex compounds of rare

Card 1/4

23839

Monocitrate complexes of the rare earths

S/020/61/138/002/022/024
B103/B220

earths is dependent on the pH of the medium and as a rule, decreases with increasing acidity. With a ratio Me : Cit = 1 : 2, a very stable complex compound is formed. Previously, the precipitate of the interaction products for a ratio Me : Cit = 1 : 1 was regarded as simple citrate and not further investigated. The authors proved that a complex compound is formed also in this case. The ion of the RE cannot be established by $K_4[Fe(CN)_6]$, the precipitate deposits only after acidification of the solution. In this case also, a general tendency is evident to increase the stability of the complex compounds of rare earths. Thus, the reaction of all rare earths proceeds negatively with $K_4[Fe(CN)_6]$. Lanthanum, neodymium, and gadolinium react with oxalate, whilst yttrium and erbium do not form precipitates any more. It is rather surprising that an addition of NaOH entails the decomposition of the complex, whereas alkali is one of the best precipitating agents of the RE. Notwithstanding the fact that an addition of 1 mole NaOH effects an increase of the pH up to 9, the stability of the complex compound increases considerably. The lanthanum ion is neither precipitated from an alkalized solution by $K_4[Fe(CN)_6]$, nor

Card 2/4

S/020/61/138/002/022/024
B103/B220

Monocitrate complexes of the rare earths

by such a strong precipitating agent as NF. The precipitate deposited in the case of lanthanum for Me: Cit = 1:1 has the empiric formula $[\text{LaC}_6\text{H}_5\text{O}_7 \cdot 3\text{H}_2\text{O}]$. This compound may be regarded as nonelectrolyte, where the 6 coordination points of the lanthanum are occupied by the citrate residue and by 3 water molecules. In aqueous solution, this compound is converted into an electrolyte, the metal becoming a component of the anion. This was proved electrolytically. The tests were made in the presence of $\text{Eu}^{152,154}$. From this fact it has been concluded that the dissociation of a water molecule of the internal sphere occurs during the dissolution: $[\text{LaC}_6\text{H}_5\text{O}_7 \cdot 3\text{H}_2\text{O}] \rightleftharpoons \text{H}[\text{LaC}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O} \cdot \text{OH}]$. When the precipitate of triaque lanthanum citrate is dissolved in 1 mole NaOH, the sodium salt of this complex compound is formed. The precipitate obtained from the alkaline solution by means of alcohol approximates the formula $\text{Na}[\text{LaC}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O} \cdot \text{CH}]$. The sodium was determined indirectly by Na^{24} . There are 2 Soviet-bloc references.

Card 3/4

Monocitrate complexes of the rare earths

23839
S/020/61/138/002/022/024
B103/B220

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im.
V. I. Vernadskogo Akademii nauk SSSR (Institute of Geo-
chemistry and Analytical Chemistry imeni V. I. Vernadskiy
of the Academy of Sciences USSR)

PRESENTED: December 28, 1960, by A. P. Vinogradov, Academician

SUBMITTED: December 15, 1960

Card 4/4

RYABCHIKOV, D.I.; KORCHEMAYAYA, Ye.K.

Complex uranyl dicarbonate. Dokl. AN SSSR 140 no.3:605-606 S '61.
(MIRA 14:9)

1. Predstavleno akademikom A.N.Frumkinym.
(Uranyl compounds)

RYABCHIKOV, D.I., BORISOVA, L.V.

"New spectrophotometric methods for the determination of rhenium."

Report to be submitted for the Intl. Feigl Anniversary symposium on
Analytic Chemistry

Edgaston, Birmingham, Great Britain 9-13 Apr 1962

PHASE I BOOK EXPLOITATION

SOV/6116

Ryabchikov, Dmitriy Ivanovich, and Igor' Konstantinovich Tsitovich

Ionoobmennyye smoly i ikh primeneniye (Ion-Exchange Resins and Their Use). Moscow, Izd-vo AN SSSR, 1962. 185 p. Errata slip inserted. 5000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo.

Resp. Ed.: A. P. Vinogradov, Academician; Ed.: M. P. Volynets;
Tech. Ed.: I. N. Dorokhina.

PURPOSE: The book is intended for engineers and industrial laboratory personnel in various industries.

COVERAGE: The book, which is intended to give wider circulation to the possibilities of utilizing ionites and ionite processes to radically improve current processes and practices in many industries, contains data and information from the literature on the properties of ion-exchange resins and on their applications in the extraction of precious and rare metals from industrial

Card 1/3

Ion-Exchange Resins and Their Use	SOV/6116
Ch. V. The Use of Ion-Exchange Resins in Metallurgy	100
Ch. VI. The Use of Ion-Exchange Resins in the Food Industry	118
Ch. VII. The Use of Ion-Exchange Resins in the Organic Synthesis Industry	127
Ch. VIII. The Use of Ion-Exchange Resins in Other Branches of Industry	137
Ch. IX. The Use of Ion-Exchange Resins in Medicine and Biology	150
Ch. X. The Use of Ion-Exchange Resins in Chemical Analysis	163

AVAILABLE: Library of Congress

SUBJECT: Chemical Engineering

Card 3/3

BN/dmp/gm
12/31/62

AVTOKRATOVA, Tat'yana Dmitriyevna; VINOGRADOV, A.P., akademik, glav.
red.; TANANAYEV, I.V., akademik, red. toma; RYABCHIKOV, D.I.,
doktor khim. nauk, red. toma; GERLIT, Yu.B., red.; SUSHKOVA,
L.A., tekhn.red.; GUSKOVA, O.M., tekhn. red.

[Analytical chemistry of ruthenium] Analiticheskaya khimiya
ruteniya. Moskva, Izd-vo Akad. nauk SSSR, 1962. 263 p.

(MIRA 15:11)

(Ruthenium--Analysis)

BUSEV, Aleksey Ivanovich; VINOGRADOV, A.P., akademik, glav. red.;
ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye.,
red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; PALEY, P.N.,
red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV,
Yu.A., red.; VOLYNETS, M.P., red.; MAKUNI, Ye.V., tekhn. red.

[Analytical chemistry of molybdenum] Analiticheskaya khimiya mo-
libdena. [By] A.I. Busev. Moskva, Izd-vo Akad. nauk SSSR, 1962.
300 p. (MIRA 16:1)

(Molybdenum—Analysis)

UDAL'TSOVA, N.I.; SAVVIN, S.B.; NEMODRUK, A.A.; NOVIKOV, Yu.P.;
DOBROLYUBSKAYA, T.S.; SINYAKOVA, S.I.; BILIMOVICH, G.N.;
SEIDYUKOVA, A.S.; BELYAYEV, Yu.I.; YAKOVLEV, Yu.V.;
NEMODRUK, A.A.; CHMUTOVA, M.K.; GUSEV, N.I.; PALEY, P.N.;
VINOGRADOV, A.P., akademik, glav. red.; ALIMARIN, I.P.,
red.; EABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye.,
red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; RYABCHIKOV,
D.I., red. toma; TANANAYEV, I.V., red.; CHERNIKHOF, Yu.A., red.;
SENYAVIN, M.M., red. toma; VOLYNETS, M.P., red.; NOVICHKOVA, N.D.,
tekhn. red.; GUS'KOVA, O.M., tekhn. red.

[Analytical chemistry of uranium] Analiticheskaya khimiya urana.
Moskva, Izd-vo Akad.nauk SSSR, 1962. 430 p. (MIRA 15:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy
khimii.

(Uranium--Analysis)

PRIVALOVA, M.M.; RYABCHIKOV, D.I.

Extraction of metals from hydrochloric acid solutions by diisoamyl
ester. Ekstr., teor., prim., app. no. 2:165-173 '62. (MIRA 15:9)
(Metals—Analysis) (Extraction (Chemistry))

S/078/62/007/001/001/005
B119/B110

AUTHORS: Ryabchikov, D. I., Yermakov, A. N., Belyayeva, V. K., Marov, I. N., Yao K'o-min

TITLE: Application of ion exchange for studying the complex formation of zirconium and hafnium with sulfate ion

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 1, 1962, 69-75

TEXT: The experimental part of the present paper was carried out by the method described in Refs. 8 and 9 (Ref. 8: D. I. Ryabchikov, A. N. Yermakov, V. K. Belyayeva, I. N. Marov, Zh. neorgan. khimii, 4, 1814 (1959); Ref. 9: The same authors, Zh. neorgan. khimii, 5, 1051 (1960)). Anion exchanger 3A3-107 (EDE-10P) and cation exchanger KY-2 (KU-2) were used. The complex formation of Zr and Hf with sulfuric acid was examined by cation exchange in chloric-acid solution with a hydrogen-ion concentration of $[H^+] = 2.33$ moles/l. At sulfuric-acid concentrations of up to 0.1 mole/l, three complexes form with Zr, which correspond to the ratios of metal : $H_2SO_4 = 1 : 1$, $1 : 2$, and $1 : 3$. Hf forms two complexes corresponding to metal : $H_2SO_4 = 1 : 1$ and $1 : 2$. The equilibrium

Card 1/3

S/078/62/007/001/001/005
B119/B110

Application of ion exchange ...

constants of the complexing reactions were calculated by methods of Fronaeus and Schubert.

$$K_j = \frac{[M(SO_4)_j^{4-2j}] [H^+]^j}{[M^{4+}] [HSO_4^-]^j}$$

Values for Zr: $K_1 = 361 \pm 12$,

$$K_2 = (2.17 \pm 0.15) \cdot 10^3, K_3 = (4.06 \pm 1.2) \cdot 10^5; \text{ for Hf: } K_1 = 130 \pm 6,$$

$K_2 = (2.09 \pm 0.1) \cdot 10^3$. It has been found that the complex $M(SO_4)_2^{2+}$ is absorbed by the cation exchanger KY-2 (KU-2) within the limits of error.

Mention is made of papers by V. F. Saksin (Ref. 4: Nauchn. dokl. vysshey shkoly. Khimiya i khim. tekhnologiya no. 1.75 (1959)), A. K. Kirakosyan, I. V. Tananayev (Ref. 5: Zh. neorgan. khimii, 4, 852 (1959)), Ye. P. Mayorova, V. V. Fomin (Ref. 11: Zh. neorgan. khimii, 3, 1937 (1958)). There are 6 figures, 4 tables, and 12 references: 5 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: E. L. Zebroski, H. W. Alter, F. K. Neumann, J. Amer. Chem. Soc., 76, 5646 (1954); R. A. Day, R. N. Wilhite, F. D. Hamolton, J.

Car

Card 2/3

RYABCHIKOV, D.I.; NAZARENKO, I.I.

Composition of the rhenium thiocyanate complex compound. Zhur.-
neorg.khim. 7 no.4:931-932 Ap '62. (MIRA 15:4)
(Rhenium compounds) (Thiocyanates)

S/078/62/007/005/007/014
B101/B110

AUTHORS: Marov, I. N., Ryabchikov, D. I.

TITLE: Complex formation of zirconium (IV) and hafnium (IV) with chloride, nitrate, and oxalate ions

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 5, 1962, 1036-1048

TEXT: The sorption of Zr and Hf from acid solution was studied by cation exchange on a KU-2 (KU-2) resin, and the stability constants were calculated according to Fronaeus. Zr^{95} and Nb^{95} and Hf^{181} , which were used for tagging, were produced by a method published (Zh. neorgan. khimii, 4, 1840 (1959); 5, 1051 (1960)). The principal amount of Nb^{95} was removed by sorption on glass wadding in 10 N HNO_3 . Results: (I) In $HClO_4 + HCl$, at a total acid concentration $\mu = 2.0$ and 4.0 moles/liter, Zr and Hf form at $\mu = 2.0$ equally stable complexes $MeCl^{3+}$, $MeCl_2^{2+}$, $MeCl_3^+$, and $MeCl_4^0$, whose stability constants are $\beta_1 = 0.95 \pm 0.05$; $\beta_2 = 0.12 \pm 0.05$;

Card 1/3

.../liter at

Complex formation of zirconium ...

S/078/62/007/005/007/014
B101/B110

$\mu = 2.0$, but only $\text{MeC}_2\text{O}_4^{2+}$ at $\mu = 4.0$. The equilibrium constants
 $K_1 = \frac{[\text{MeC}_2\text{O}_4^{2+}][\text{H}^+]^2}{[\text{Me}^{4+}][\text{H}_2\text{C}_2\text{O}_4]}$ for Zr are $(2.96 \pm 0.3) \cdot 10^5$ and
 $(4.0 \pm 0.6) \cdot 10^5$ at $\mu = 2.0$ and 4.0 , respectively; for Hf, they are
 $(1.36 \pm 0.36) \cdot 10^5$ and $(1.4 \pm 0.3) \cdot 10^5$, respectively. For
 $K_2 = \frac{[\text{Me}(\text{C}_2\text{O}_4)_2]^{2-}[\text{H}^+]^2}{[\text{Me}^{4+}][\text{H}_2\text{C}_2\text{O}_4]^2}$ and $\mu = 2.0$, the following was
found: $(4.8 \pm 1.6) \cdot 10^9$ for Zr, and $(5.3 \pm 1.8) \cdot 10^9$ for Hf. There are 6
figures and 13 tables. The most important English-language references are:
R. E. Connick, W. H. McVey, J. Amer. Chem. Soc., 71, 3182 (1949);
A. E. Levitt, H. Freund, J. Amer. Chem. Soc., 78, 1545 (1956); McVey,
Hanford Work Report, 21, 487.

SUBMITTED: January 12, 1961

Card 3/3

PRIVALOVA, M.M.; RYABCHIKOV, D.I.

Polarographic investigation of antimony complexes with
ethylenediaminetetraacetic and 1,2-diaminocyclohexanetetraacetic
acids. Zhur. hsorg.khim. 7 no.11:2537-2544 N '62. (MIRA 15:12)
(Antimony compounds) (Acetic acid)
(Polarography)

RYABCHIKOV, D.I.; YAO KE-MIN' [Yao K'o-min]; MAROV, I.N.

Complex formation of indium with gallic acid. Zhur.neorg.khim.
7 no.11:2545-2548 N '62. (MIRA 15:12)

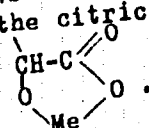
1. Institut geokhimii i analiticheskoy khimii imeni
V.I. Vernadskogo AN SSSR.
(Indium compounds)
(Gallic acid)

S/078/62/007/012/008/022
B144/B180

AUTHORS: Ryabchikov, D. I., Marov, I. N., Yao K'o-Min

TITLE: Complex indium citrates

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 12, 1962, 2716-2724

TEXT: Complexes of In and citric acid were studied by potentiometric and high-frequency titration and by ion-exchange separation. Synthesis: 1) from InCl_3 and Na_3Cit ; 2) from InCl_3 and ammonia. From the titration of 1:1, 1:2 and 1:3 mixtures of $\text{InCl}_3 + \text{H}_3\text{Cit}$ and $\text{InCl}_3 + \text{Na}_3\text{Cit}$, it was found that 1:1 complexes are formed. Na_3Cit addition reduced the pH of the InCl_3 solution. This is due to the splitting-off of one H ion and ring formation and shows that not only the carboxyl groups but also the hydroxy group of the citric acid take part in the reaction which yields a chelate compound, . The complex $\text{Na}[\text{In}(\text{C}_6\text{H}_4\text{O}_7)(\text{H}_2\text{O})_2]$, synthesized

Card 1/3

Complex indium citrates

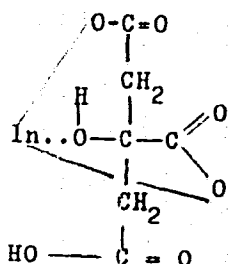
S/078/62/007/012/008/022
B144/B180

by 1) has a charge of -1. Its 10^{-2} mole solution has a pH of 3.5. The complex resultant from 2), $H[In(C_6H_4O_7)(H_2O)_2]$, is hardly soluble in H_2O . These results were confirmed by the ion-exchange method. The $In: Cit^{3-2}$ ratio was 1:1 with a pH of ~ 7.1 . Sorption of In from citrate solution by KY-2 (KU-2) or 3A-10 (EDE-10) anionite and desorption with $NaClO_4$ yielded the charge and its sign using the formula $d \log K_d / d \log [ClO_4^-] = m/n$, where m is the charge of the citrate complex and n the charge of the $[Cl_4^-]$ ion, being -1. The complex composition was determined from the indium distribution in solutions of $HClO_4$ (0.10, 0.15 or 0.20 mole) + $NaClO_4$ ($\mu = 0.5$ mole) in the presence of 0.03 - 0.20 mole citric acid. Found graphically from the ratio $\log K_f / d \log H^+$ the number of H ions was 2. Hence, the reaction is: $In^{3+} + H_3Cit \rightleftharpoons InHCit^+ + 2H^+$. The equilibrium constant is 0.09 ± 0.006 . The configuration

Card 2/3

Complex indium citrates

S/078/62/007/012/008/022
B144/B180



is suggested for the complex formed in highly acid medium. There are 9 figures and 4 tables.

SUBMITTED: March 14, 1962

Card 3/3

RYABCHIKOV, D.I.; RYABUKHIN, V.A.

Activation-chromatographic analysis of rare earth elements.
Zhur.anal.khim. 17 no.4:432-441 J1 '62. (MIRA 15:8)

1. V.I.Vernadsky Institute of Geochemistry and Analytical
Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Rare earths—Analysis) (Chromatographic analysis)

S/075/62/017/007/006/006
B119/B186

AUTHORS: Ryabchikov, D. I., Borisova, L. V., and Gerlit, Yu. B.

TITLE: Chromatographic separation of rhenium from molybdenum and tungsten by means of mixed eluents on ЭД-10 (EDE-10) anionite

PERIODICAL: Zhurnal analiticheskoy khimii, v. 17, no. 7, 1962, 890 - 892

TEXT: Separation experiments were made with the following eluents: $2 \text{ M H}_3\text{PO}_4$ (I); $0.2 \text{ M H}_3\text{PO}_4 + 0.3 \text{ M Na}_2\text{HPO}_4$ (II); $0.2 \text{ M H}_3\text{PO}_4 + 0.6 \text{ M Na}_2\text{SO}_4$ (III). The ionic strength of the solutions was kept constant. The complete separation and the degree of purity of the Re separated were proved by means of R186, Mo99, and W185, whereby good quantitative results were obtained. 40 - 45 ml of I, 30 - 35 ml of II, and 24 - 25 ml of III were used to elute equal amounts of Re. Best results in Re elution were from III. There are 4 figures and 3 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy AS USSR, Moscow)

Card 1/2

Chromatographic separation of...

S/075/62/017/007/006/006
B119/B186

SUBMITTED: September 6, 1961

Card 2/2

RYABCHIKOV, F.D., inzh.; KUSTOBAYEV, G.G., inzh.; SOKOLOV, V.A., inzh.;
KHISAMOV, F.N., inzh.

Accelerating the cooling of sheet steel in bell furnaces.
Stal' 22 no.8:748-749 Ag '62. (MIRA 15:7)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Furnaces, Heat-treating)

KORCHEMNAYA, Ye.X.; RYABCHIKOV, D.I.; NAUMOVA, V.I.

Separation of small amounts of cerium from the main components
of a chromium-nickel alloy. Zav.lab. 23 no.5:539-540 '62.
(MIRA 15:6)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo
AN SSSR.

(Chromium-nickel alloys) (Cerium--Analysis)

RYABCHIKOV, D.I. (Moscow, Bogorodskiy val.d.3)

Complex compounds of rhenium and their use in analytical chemistry.
Acta chimica Hung 32 no.2:183-190 '62.

1. Institut geokhimii i analiticheskoy khimii Akad.nauk SSSR.

S/020/62/144/003/024/030
B124/B101AUTHORS: Byabchikov, D. I., Gerlit, Yu. B., Karyakin, A. V.,
Zarinskiy, V. A., and Zubrilina, M. Ye.

TITLE: Extraction recovery of perrhenates with ketones

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1962, 585-587

TEXT: Data on the influence exerted by the properties of the ketone on the distribution coefficient α in the extraction of perrhenates are presented, and the mechanism of extraction recovery of perrhenates is studied by means of some thermodynamic parameters and the infrared spectra. The relation between the ratio $28 : MW$ (28 being the molecular weight of the CO group and MW the molecular weight of the ketone) of the extraction solvent and the distribution coefficient was found to be linear for the methyl ketone series, while, with ketones of the same molecular weight and structures different from those of the methyl ketones, deviations from linearity were established. A constant value of ΔH of 9.2 ± 0.3 kcal was established for the methyl ketones. The value for other types of ketones is somewhat lower. Generally, lower values of the "thermodynamic" distribution coefficient α'

Card 1/3

Extraction recovery of ...

S/020/62/144/003/024/030
B124/B101

and ΔH as well as a shift of the stretching vibration frequency of the C=O group were found in the presence of sodium perrhenate. Since obviously no fundamental difference is to be expected in one series of solvents concerning the mechanism of extraction recovery of sodium perrhenate, the respective deviations are probably due to the difference in the composition of the solvates formed. The infrared spectrum of water in several solvated associates of the perrhenate ion with hydrogen, sodium, potassium, calcium, and aluminum ions remained practically unchanged. When the solvating cations are replaced by a hydrophilic group such as $(C_6H_5)_4As^+$ or $(C_6H_5NH)_3C^+$, some changes of the intensity distribution in the spectrum of water are observed, with the main portion of water remaining more firmly bound than in the ketone-water system. Thus, it can be concluded that the perrhenate ion is hydrated, which agrees with data in literature. The shift of the absorption band frequency of the OH group is somewhat greater in the presence of salts than in the presence of water. It can be stated that there is a direct bond between the ketone and the rhenium ion in the solvate. There are 3 figures and 1 table. The most important English-language reference is: R. D. Waldron, J. Chem. Phys., 26, 809 (1960).

Card 2/3

RYABCHIKOV, D.I.; BORISOVA, L.V.

Rhenium - thiourea complex compounds. Dokl. AN SSSR 145 no.2:355-357 11 '62. (MIRA 15:7)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo AN SSSR. Predstavleno akademikom A.P.Vinogradovym.
(Rhenium compounds) (Urea)

RYABCHIKOV, D.I.; TSITOVICH, I.K.; TORPUDZHIYAN, M.K.

Comparative sorption capacity of transition elements of the
fourth period by mineral ion exchangers. Dokl.AN SSSR 145
no.4:825-828 Ag '62. (MIRA 15:7)

1. Kubanskiy sel'skokhozyaystvennyy institut. Predstavleno
akademikom A.P.Vinogradovym.
(Transition metals) (Ion exchange)

RYABCHIKOV, D.I., prof., otr. red.; VAGINA, N.S., kand. tekhn. nauk, red.; KORCHEMNAYA, Ye.K., kand. khim. nauk, red.; RUSANOV, A.K., doktor tekhn. nauk, red.; RYABUKHIN, V.A., kand. khim. nauk, red.; SENYAVIN, M.M., kand. khim. nauk, red.; SKLYARENKO, Yu.S., kand. khm. nauk, red.; STROGANOVA, N.S., nauchn. sotr., red.; MAKUNI, Ye.V., tekhn. red.

[Rare-earth elements] Redkozemel'nye elementy. Moskva, Izd-vo AN SSSR, 1963. 391 p. (MIRA 17:2)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii.

ACCESSION NR: AT4035163

S/0000/63/000/000/0134/0140

AUTHOR: Ryabchikov, D. I.; Terent'yeva, Ye. A.

TITLE: Complex-formation as the basis for the separation of the rare-earth elements

SOURCE: AN SSSR. Institut geokhimii i analiticheskoy khimii. Redkozemel'nyye elementy* (Rare-earth elements). Moscow, Izd-vo AN SSSR, 1963, 134-140

TOPIC TAGS: rare earth, rare earth separation, rare earth analysis, complex-formation, maleic acid, fumaric acid, citric acid, nitrilotriacetic acid, EDTA

ABSTRACT: In a general discussion of the theoretical bases for the separation of the rare earths, the authors note that some observations made on the complexes of the rare-earth elements with the isomeric, dibasic, unsaturated acids maleic and fumaric acid are of considerable interest. Under the influence of temperature, light, halogen acids, etc., the less stable maleic acid is converted to the more stable fumaric acid. Maleic acid forms many soluble complexes with the rare-earth elements. With fumaric acid, no complex can be formed; therefore, the difficultly soluble simple salts are precipitated spontaneously. Upon standing or heating in the presence of HBr, the readily soluble complex maleates of the rare-earth elements are gradually converted into the difficultly soluble fumarates. Therefore,

Card 1/3

ACCESSION NR: AT4035163

If the fumarates of the different rare-earth elements were found to have different solubilities, the fractions containing different components could be separated. This could be taken as a basis for a new method of separation of rare-earth mixtures. Extensive experimental material leads to the important conclusion that the rare-earths are rather strong complex-forming compounds, which produce a bond with the ligands preferably through the oxygen atom and less frequently through a tertiary nitrogen. The complex-forming capacity of the rare-earth elements with any ligand increases with decreasing ionic radius of the element in the order La - Lu. The strength of the complex depends on the pH of the medium and usually decreases with increasing acidity. For all the rare-earth elements in the trivalent state, the coordination number is six. The complex steps during the isolation of individual rare-earth elements from natural material are the division of their totality into two subgroups (cerium and yttrium), separation of the predominant elements (La, Ce and Y), and separation of the residual mixture. The conditions for this separation are discussed. At optimal parameters of the process under dynamic conditions, the coefficients of distribution of several rare-earth elements (Tu, Yb, Er) are measured and the separation factors are calculated. On the basis of experimental data, other complexing agents are arranged in the following order according to their separating power: ethylenediaminetetraacetic acid, nitrilotriacetic acid, citric acid. Orig. art. has: several chemical equations, 1 table and 3 figures.

Card 2/3

ACCESSION NR: AT4035163

ASSOCIATION: Institut geokhimii i analiticheskoy khimii AN SSSR (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 31Oct63

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: IC

NO REF. SOV: 014

OTHER: 000

Card 3/3

S/078/63/008/003/007/020
B117/B186

AUTHORS: Ryabchikov, D. I., Marov, I. N., Yao K'o-min

TITLE: Study of complex formation between indium and certain complexons by the ion exchange method

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 8, no. 3, 1963, 641-650

TEXT: The ion exchange method was used to study the formation, equilibrium and stability of complexes between In^{3+} and the following: diethylene triamine pentaacetic acid (I), ethylene diamine tetraacetic acid (II), diamino cyclohexane tetraacetic acid (III), hexamethylene diamine tetraacetic acid (IV), oxyethylene diamine triacetic acid (V), nitrile triacetic acid (VI), oxyethyl imino diacetic acid (VII), N,N'-bis-(o-hydroxyphenyl)ethylene diamine - N,N'-diacetic acid (VIII), and ethylene diamine - N,N'-bis-(o-oxyphenyl)-N-acetic acid (IX). The hydrogen ion concentration was 0.1 - 0.4 moles/liter at $\mu = 0.5$. 1:1 indium complexes were formed at the hydrogen ion and complexon concentrations investigated. To calculate the equilibrium constants, the number of complexon hydrogen

Card 1/2

Study of complex formation between ...

S/078/63/008/003/007/020
B117/B186

ions separable during complex formation was determined. Five H^+ ions were separated from the molecule of (I), four each from (II) and (III), three each from (V) and (VI), and two from (VII). The equilibrium constants decrease in the order $II > III > V > VI > I > VII > IV$, and are therefore related to the number of CH_3COO^- groups bound to the In^{3+} . The equilibrium constants and the dissociation constants calculated from the Davis equation were used to determine the stability constants of the indium complexes. The stability of these complexes decreases in the order $I > III > II > V > VI > VII$, which suggests a correlation of this order with the number of five-membered rings formed during complex formation. There are 1 figure and 7 tables.

UBMITT: September 7, 1962

Card 2/

REABCIKOV, D.I. [Ryabchikov, D.I.]; REABUHIN, V.A. [Ryabukhin, V.A.]

Chromatographic analysis by activation of the elements of rare
earths. *Analele chimie* 18 no.2:114-125 Ap-Je '63.

RYABCHIKOV, D.I.; YAO KE-MIN' [Yao K'o-min]; ZARINSKIY, V.A.

Complex formation of indium with some complexons. Zhur.neorg.khim.
8 no.2:338-341 F '63. (MIRA 16:5)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo
AN SSSR.

(Indium compounds) (Complexons)

RYABCHIKOV, D.I.; VOLYNETS, M.P.; ZARINSKIY, V.A.; IVANOV, V.I.

High-frequency titration. Report No.7: Carbonate compounds
of thorium. Zhur. anal. khim. 18 no.3:348-356 M'63.
(MIRA 17:5)

1. Institut geokhimii i analiticheskoy khimii imeni
Vernadskogo AN SSSR, Moskva.

RYABCHIKOV, D.I.; VOLYNETS, M.P.; ZARINSKIY, V.A.

✶ Reaction of thorium with sodium hexamethylenediamine
tetraacetate. Zhur.anal.khim. 18 no.4:542-544 Ap '63.
(MIRA 16:6)

1. V.I.Vernadsky Institute of Geochemistry and Analytical
Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Thorium compounds) (Acetic acid)

RYABCHIKOV, D.I.; BORISOVA, L.V.

Interaction of perrhenates with diphenylcarbazide and diphenylcarbazone. Zhur.anal.khim. 18 no.7:851-855 J1 '63.
(MIRA 16:11)

1. V.I. Vernadskiy Institute of Geochemistry and Analytical
Chemistry Academy of Sciences, U.S.S.R., Moscow.

L 17103-63 EWP(q)/EWT(m)/BDS AFFTC RM/JD/JG s/0032/63/029/007/0785/0787
 ACCESSION NR: AP3004227

AUTHORS: Ryabchikov, D. I.; Borisova, L. V.

TITLE: Determination of rhenium in alloys by means of diphenylcarbazide

SOURCE: Zavodskaya laboratoriya, v. 29, no. 7, 1963, 785-787

TOPIC TAGS: rhenium, alloy, diphenylcarbazide

ABSTRACT: An extractive-photometric method for the determination of rhenium is proposed (with interference only from Cu, V, Se, and Mo). The method does not require preliminary separation of rhenium from Cd, Ag, Bi, Zn, divalent Mn, Al, Fe, monovalent Au, trivalent Cr, Wo, Ti, Co, Ni, Zr, and Nb. The method is based on the reaction of rhenium with diphenylcarbazide in 8-normal hydrochloric acid, the optical density of the resulting substance being estimated in a spectrophotometer at 540 millimicrons with an accuracy of 5%. The procedure used for a tungsten alloy involves digesting 5-100 mg of the sample under gentle heating for 10-15 minutes with 5-10 ml of ammonia solution (under a drop-by-drop addition of 30% hydrogen peroxide until completely clear). The subsequent procedure involves drying, treatment with hydrochloric acid and dissolving in NaOH. For alloys containing Cr, Co, Al, Fe, Ni, and Ti the process requires digestion with HCl and additions of either

Card 1/2

L 17103-63

ACCESSION NR: AP3004227

hydrogen peroxide or nitric acid. The diphenylcarbazide reaction is conducted in separatory funnels containing 2 ml of 10-normal HCl, to which are added 0.5 ml of the obtained alloy solution, 2 ml of 0.1-molar diphenylcarbazide solution in acetone, and 5-7 ml of chloroform. The purple coloration which develops after shaking is located in the chloroform phase. Orig. art. has: 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo
(Institute of Geochemistry and Analytical Chemistry)

SUBMITTED: 00

DATE ACQ: 02Aug63

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 001

Card 2/2

PALEY, P.N.; RYABCHIKOV, D.I.; DEDKOV, Yu.M.; ZOLOTOV, Yu.A.

Methods of concentration in analytical chemistry. Zav.lab. 29
no.11:1279-1280 '63. (MIRA 16:12)

RYABCHIKOV, D. I.; ZARINSKIY, V. A.

"Study of the complex formation with rare metals by the high frequency method."
report presented at 8th Intl Conf, Coordination Chemistry, Vienna, 7-11 Sep 64.

SAVITSKIY, Ye.M., doktor khim. nauk, otv. red.; RYABCHIKOV, D.I.,
doktor khim. nauk, red.; BIBIKOVA, V.I., doktor tekhn.
nauk, red.; TYLKINA, M.A., kand. tekhn. nauk, red.;
POVAFOVA, K.B., kand. tekhn. nauk, red.; BORISOVA, L.V.,
inzh., red.; MAKARENKO, M.G., red.

[Rhenium; transactions] Renii; trudy. Moskva, Nauka,
1964. 257 p. (MIRA 18:1)

1. Vsesoyuznoye soveshchaniye po probleme reniya. 2d, 1962.

VARSHAL, G.M.; RYABCHIKOV, D.I.

Gravimetric determination of the total of rare-earth elements
in rocks, minerals, and alloys. Zhur. anal. khim. 19 no.2:
202-207 '64. (MIRA 17:9)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR i Institut geokhimii i anali-
ticheskoy khimii imeni V.I. Vernadskogo AN SSSR, Moskva.

RYABCHIKOV, D.I.; NAZARENKO, I.I.

Valency of rhenium in its thiocyanate complex compounds.
Zhur. anal. khim. 19 no.2:229-231 '64. (MIRA 17:9)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo
AN SSSR, Moskva.

ACCESSION NR: AP4038917

S/0075/64/019/005/0642/0643

AUTHOR: Ryabchikov, D. I.; Volyanets, M. P.

TITLE: Determination of thorium in a mixture of lanthanide series oxides (Polirit) by complexing chromatography.

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 5, 1964, 642-643

TOPIC TAGS: thorium, ion exchange, separation, spectrophotometric analysis, lanthanide series oxide, complexing chromatography

ABSTRACT: The determination of thousandths of one percent of thorium in Polirit (a mixture of lanthanide oxides consisting of 40 - 47 % CaO_2 ; 58 - 41 % Nd_2O_3 and Pr_2O_3 ; approximately 2 % SiO_2 , Al_2O_3 , CaO , Fe_2O_3 , MgO) is a complex problem because thorium is very similar in its properties to lanthanides. This study was conducted to investigate the possibility of separating thorium by means of chromatography, using complexing agents as eluents. To verify the possibility of the selective elution of thorium from the cationite column using diethylenetriaminepentaacetic acid, use was made of radioactive isotopes: Ca^{144} ($T_{1/2}$ =282 days), Y^{91} ($T_{1/2}$ =61 days) and Th^{230} ($T_{1/2}$ =8.3 \cdot 10⁴ years). The experiments were first conducted with synthetic

Card 1/2

ACCESSION NR: AP4038917

solutions and then with Polirit. KU-2 cationite resin (50 - 80 mesh) was used in the ion exchange column. The final determination of thorium after separation was conducted spectrophotometrically, using arsenazo III. Polirit analyzed by this method in two simultaneous experiments contained $4.7 \cdot 10^{-3}$ and $4.9 \cdot 10^{-3}$ % Th. Orig. art. has: 1 figure.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. N. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 21Oct63

ENCL: 00

SUB CODE: IC, GC

NO REF SOV: 003

OTHER: 000

Card 2/2

RYABCHIKOV, D.I.; VOLYNETS, M.P.; ZARINSKIY, V.A.; IVANOV, V.I.

Reply to the "remarks" by I.I. Cherniaev, V.A. Golovnia, A.K.
Molodkin on the article by D.I. Riabchikov, M.P. Volynets,
V.A. Zarinskii and V.I. Ivanov "High frequency titration.
Report No.7: Thorium carbonate compounds". Zhur. anal. khim.
19 no.8:1038-1040 '64. (MIRA 17:11)

L 16671-65 EWP(m)/EWP(b) RAEM(o)/SSD/AFWL/ASD(m)-3 JD/JG
ACCESSION NR: AP4045848

S/0075/64/019/009/1110/1116 /

AUTHOR: Ryabchikov, D. I.; Lazarev, A. I.; Lazareva, V. I.

B

TITLE: Photometric determination of microimpurities in rhenium and its preparations

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 9, 1964, 1110-1116

TOPIC TAGS: spectrophotometry, colorimetric analysis, vanadium, nickel, tin, cobalt, manganese, iron, chromium, zinc, rhenium

ABSTRACT: Since small amounts of impurities affect the properties of rhenium it was necessary to develop a method for the determination of these impurities. The photometric method was used for the determination of vanadium, nickel, tin, cobalt, manganese, iron, chromium and zinc. The optical density of solutions was measured with a SF-5 spectrophotometer and a FEK-M photoelectric colorimeter. The Beer-Lambert law was obeyed for the solutions of all elements except vanadium. The amount of element was determined from the calibration curve or by the method of standard additions. Vanadium was determined from its

Card 1/3

L 16671-65
ACCESSION NR: AP4045848

catalytic effect on the oxidation of aniline with chlorate in a weakly acid medium. At room temperature the rate of reaction is insignificant and the desired sensitivity is obtained by keeping the solution on a steam bath for 10 minutes. Nickel was determined by the extraction-photometric method using α, α' -furyldioxime. Copper interferes with this determination. Tin was determined using 9-phenyl-2,3,7-trihydroxy-6-fluorone as the reagent in the presence of citric acid. The molar extinction coefficient of this complex at 505 m μ is 7.7×10^4 . Manganese was determined as permanganate, produced by oxidation of divalent manganese with potassium periodate. Iron was determined using α, α' -dipyridyl complex with divalent iron. The iron was reduced using hydroxylamine, while thiourea was used for masking copper, silver and mercury. Diphenylcarbazide was used as the reagent for hexavalent chromium. Complexon III was used to increase the stability of ethanolic solutions of diphenylcarbazide. Cobalt was determined using nitro-P salt. Zinc was separated from interfering elements by extraction and determined using methylene blue. Orig. art. has: 1 figure and 8 tables.

Card 2/3

L 16671-65
ACCESSION NR: AP4045848

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo
AN SSSR (Institute of Geochemistry and Analytical Chemistry AN SSSR)

SUBMITTED: 26Sep63

ENCL: 00

SUB CODE: GC, IC

NO REF SOV: 023

OTHER: 001

Card 3/3

L 17530-65 EWT(m)/ENP(t)/ENP(b) IJP(c)/AFWL/SSD JD/JG
ACCESSION NR: AP4047498 S/0075/64/019/010/1210/1218

AUTHOR: Ryabchikov D. I.; Savvin, S. B.; Dedkov, Yu. M.

TITLE: A comparative study of certain reagents for scandium ²¹ ^B

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 10, 1964, 1210-1218

TOPIC TAGS: scandium, color reagent, colorimetric analysis, photometric determination, complexonometric determination

ABSTRACT: The color reactions of scandium with the following organic reagents were compared: 2,4-sulfochlorophenolanthranil; stilbazo; sulfonazo; xlenol orange; chromazurol S; 3-nitrophenol R; pyrocatechol violet; arsenazo I, II, III, AYe, ASH, T, and M; 2,4-sulfochlorophenol AYe, S, T and R. According to their sensitivity, selectivity and maximum admissible acidity, arsenazo III, 2,4-sulfochlorophenol S and 2,4-sulfochlorophenol R were found to be the most suitable for the photometric determination of scandium and xlenol orange, arsenazo III and 2,4-sulfochlorophenol were most suitable for the complexonometric determination.

Card 1/2

L 17530-65

ACCESSION NR: AP4047498

ination. An extraction-photometric method was suggested for increasing the selectivity of the scandium determination in the presence of rare earths. Diphenylguanidinium salts of Sc-2, 4-sulfochlorophenol S or Sc-2, 4-sulfochlorophenol R were extracted with butanol and the optical density of the extract was measured. 0.01% of scandium can thus be determined in rare earth compounds. Orig. art. has: 4 figures and 20 formulae.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry Academy of Sciences SSSR)

SUBMITTED: 21 Jan 64

ENCL: 00

SUB CODE: IC, MM

NO REF SOV: 020

OTHER: 030

Card 2/2

L 21098-65 EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pu-4 AFETR/IJP(c) JD/WW/JG

ACCESSION NR: AP4049101

S/0075/64/019/011/1411/1412

AUTHOR: Ryabchikov, D.I., Bukhtiarov, V.Ye.

TITLE: Determination of zirconium and hafnium in each other's presence in molybdenum-based alloys by ion exchange chromatography

SOURCE: Zhurnal analiticheskoy khimii, v. 10, no. 11, 1964, 1411-1412

TOPIC TAGS: ion exchange chromatography, zirconium determination, molybdenum-based alloy, hafnium determination, complexometric analysis

ABSTRACT: The preparation of the test solution from the alloy is described. This solution (in 0.5 M HCl) is forced through a KU-2 ion exchange column. Zirconium is extracted from the column with 0.024 M citric acid in 1 M HCl, the hafnium subsequently with 0.3 M oxalic acid. The elements are then determined quantitatively by chelation with EDTA in the presence of xylene orange, after the citric and oxalic acids have been decomposed with potassium permanganate. The results were tabulated and found to be sufficiently accurate. Orig. art. has: 1 table.

Card 1/2

L 21098-65

ACCESSION NR: AP4049101

ASSOCIATION: None

SUBMITTED: 23Nov63

NO REF SOV: 003

ENCL: 00

SUB CODE: MM, IC

OTHER: 002

Card 2/2

RYABCHIKOV, D.I.; KURILEVICHKOVA, G. Ye.

Determination of small amounts of boron in the presence of
fluorine and silicon. Zhur. anal. khim. 19 no.12:1495-1497
'64 (MIRA 18:1)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.
Vernadskogo AN SSSR, Moskva.

RYABCHIKOV, D.I.; NAZARENKO, I.I.

Advances in the chemistry of complex compounds of selenium and tellurium. Usp.khim. 33 no.1:108-123 Ja '64. (MIRA 17:4)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo AN SSSR.

RYABCHIKOV, D.I.; POZDNYAKOV, A.A.

Reduction of technetium (VII) by hydrochloric acid. Dokl. AN SSSR
155 no.1:153-155 Mr '64. (MIRA 17:4)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo
AN SSSR. Predstavleno akademikom A P.Vinogradovym.

RYABCHIKOV, D. I.; TSITOVICH, I. K.; TORPUDZHIYAN, M. K.

Mineral ion exchangers based on titanium. Dokl. AN SSSR 156
no. 1:110-113 My '64. (MIRA 17:5)

1. Institut geokhimii i analiticheskoy khimii im. "I. V. Vernadskogo AN SSSR. Predstavleno akademikom I. P. Vinogradovym.

RYABCHIKOV, D.I., *otv. red.*; ALIMARIN, I.P., *red.*; PALEY, P.N.,
red.; BORISOVA, L.V., *red.*; ZOLOTOV, Yu.A., *red.*;
SENYAVIN, M.M., *red.*; KARYAKIN, A.V., *red.*; VOLYNETS,
M.P., *re*

[Modern methods of analysis; methods of studying the
chemical composition and structure of substances. On
the seventieth birthday of Academician A.P.Vinogradov]
Sovremennyye metody analiza; metody issledovaniya khimi-
cheskogo sostava i stroeniya veshchestv. K semidesyati-
letiyu akademika A.P.Vinogradova. Moskva, Nauka, 1965.
333 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Institut geokhimi i analitiche-
skoy khimii. 2. Chlen-korrespondent AN SSSR (for
Ryabchikov).

L 54471-65 EWT(m)/EWG(m)/ENP(j)/T/ENP(t)/ENP(b) Pc-4 IJP(c) RWH/JD/
JG/GS/RM

ACCESSION NR: AT5013648

UR/0000/65/000/000/0130/0133
543.544.6:543.21:546.718+546.719

25
0+1

AUTHOR: Pozdnyakov, A. A.; Ryabchikov, D. I.

TITLE: Chromatographic separation of technetium and rhenium

SOURCE: AN SSSR. Otdaleniye obshchey i tekhnicheskoy khimii. Radiokhimicheskkiye metody opredeleniya mikroelementov (Radiochemical methods for determining trace elements); sbornik statey. Moscow, Izd-vo Nauka, 1965, 130-133

TOPIC TAGS: column chromatography, technetium separation, rhenium separation, anion exchange resin, partition coefficient

ABSTRACT: The aim of this work was to determine the possibility of separating Tc and Re ions by means of concentrated HCl solutions, in which these ions are present in the form of $TcCl_6^{2-}$ and ReO_4^- . A study of the partition coefficients of Tc and Re ions of various oxidation states on the anion exchangers AV-17 and Dowex 1x4 in HCl solutions showed the presence of a strong adsorption of the complex anions $TcCl_6^{2-}$ (Tc^{IV}) on AV-17. It was found that the most pronounced differences in the partition coefficients of $TcCl_6^{2-}$ and ReO_4^- occurred in ~10 M

Card 1/2

L 54471-65

ACCESSION NR: AT5013648

HCl solutions: the separation factors were 50 for the AV-17 resin and 17 for Dowex 1x4. An efficient method of chromatographic separation of Tc and Re ions was developed, based on a selective reduction of Tc ions to the tetravalent state by hydrochloric acid, and an adsorption of the $TcCl_6^-$ ions formed that was very different from the adsorption of ReO_4^- in 10 M HCl. The eluents were 10 M HCl for the elution of rhenium and 4 N NH_4OH for the recovery of technetium. Orig. art. has: 2 figures, 2 formulas and 1 table.

ASSOCIATION: None

SUBMITTED: 16Apr64

ENCL: 00

SUB CODE: IC, GC

NO REF SOV: 003

OTHER: 004

Card *BLB* 2/2

RYABCHIKOV, D.I.; VOLYNETS, M.P.

Thorium complexes. Zhur. neorg. khim. 10 no.3:619-627 Mr '65.
(MIRA 18:7)

L 32723-55 EWT(m)/EWT(t)/EWT(h) IJP(o) JD/JG

ACCESSION NR: AP500443

S/0075/65/020/001/0128/0130

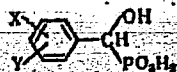
AUTHORS: Ryabchikov, D. I.; Dedkov, Yu. M.

TITLE: Application of aromatic phosphonic acids to the determination of rare elements

SOURCE: Zhurnal analiticheskoy khimii, v. 20, no. 1, 1965, 128-130

TOPIC TAGS: mandelic acid, methanol, zirconium, hafnium, thorium, scandium, ytterbium, uranium, phosphonic acid, rare earth elements

ABSTRACT: The possibility of precipitating rare elements by derivatives of mandelic acid substituted at the carboxylic group by phosphoric acid was investigated:



A list of the characteristics of synthesized compounds is to be given later. This paper presents analytical features of methanol phosphol acid hexarene (methaphosphol). The nomenclature follows the system suggested by A. P. Terent'yev, A. N. Kost, A. M. Tsukerman, and V. M. Potapov (Nomenklatura organicheskikh soyedineniy. Izd-vo AN SSSR, M., 1955). Test tube precipitations occurred on mixing

Card 1/2

L 32723-65

ACCESSION NR: AP5004433

4.5 ml of hydrochloric acid of required concentration, 0.5 ml of 10% reagent in hydrochloric acid of same concentration, and 0.1-0.2 ml of solution of the investigated element, after heating for 10 minutes on a boiling water bath and then cooling. Zirconium, hafnium, thorium, scandium, niobium, and lanthanum precipitates at acidities from 12 N to 0.1 N and the sensitivities ranging from 2 to 50 micrograms/ml were obtained. The reaction is particularly interesting for zirconium, as shown by its precipitation with metaphosphoric and phenylarsonic acid in the presence of disturbing ytterbium, thorium, uranium (VI), and iron (III). Orig. art. has: 2 tables and 2 formulas.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo, Moscow (Institute of Geochemistry and Analytical Chemistry)

SUBMITTED: 30Jan64

ENCL: 00

SUB CODE: GO

NO REF SOV: 003

OTHER: 001

Card 2/2

L 33526-65 EWT(m)/EWP(t)/EWP(b) LJP(c) JD/JG

ACCESSION NR: AP5005472

S/0032/65/031/002/0154/0155

AUTHORS: Ryabchikov, D. I.; Savvin, S. B.; Dedkov, Yu. M.

TITLE: Extraction and photometric determination of scandium in rare earth preparations

SOURCE: Zavodskaya laboratoriya, v. 31, no. 2, 1965, 154-155

TOPIC TAGS: photometry, scandium, rare earth, calcium, magnesium, zinc, thorium, titanium, uranium, aluminum, iron II

ABSTRACT: The authors state that 2,4-sulfochlorophenol is the most appropriate reagent for separating rare earth elements and scandium and for the determination of the latter. At pH 2.5-3.0 it forms with scandium an intensely red complex easily extractable with n-butyl alcohol, while the rare earths and Ca, Mg, Zn, Fe(II) and Y remain in the aqueous phase. Thorium, titanium, and aluminum must be removed before analysing for scandium is started. Thorium is removed by extraction with thoron I. Some 90% of thorium and 2-3% of scandium are extracted from 0.05-N HCl. Three consecutive extractions suffice for lowering the thorium content to the required limit. The authors state that 2,4-sulfochlorophenol may also be used

Card 1/2

L 33526-65

ACCESSION NR: AP5005472

for rapid extraction and precipitation of rare earth compounds in separating them from Th, Sc, Zr, Fe (II). Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo, Akademiya nauk SSSR (Institute of Geochemistry and Analytical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: GC

NO REF SOV: 001

OTHER: 002

Card 2/2

RYABCHIKOV, D. I.; NAZARENKO, I. I.; kard. khim. nauk

Pure substances. Priroda 54 no. 6:41-47. Je '65.

(MIRA 18:6)

1. Chlen-korrespondent AN SSSR (for Ryabchikov). 2. Institut geo-khimi i analiticheskoy khimi im. V. I. Vernadskogo AN SSSR, Moskva (for Nazarenko).

L 53003-65 EWT(m)/EWG(m)/EWP(t)/EWP(b) IJP(o) RWH/JD/RM

ACCESSION NR: AP5010840

UR/0020/65/161/004/0896/0898

AUTHOR: Ryabchikov, D. I. (Corresponding member AN SSSR); Pozdnyakov, A. A.

TITLE: Investigation of adsorption of technetium from aqueous solutions onto Russian-made anion exchange resin

SOURCE: AN SSSR. Doklady, v. 161, no. 4, 1965, 896-898

TOPIC TAGS: technetium extraction, anion exchange resin, separation

ABSTRACT: This work was done to develop a method for recovering technetium from various waste aqueous solutions in the nuclear energy industry. Adsorptive properties of the domestic anion exchange resins AV-16, AV-17, AV-18, and EDE-10P were examined. Separation coefficients for technetium isotopes in acid solution were determined. Concentrations of technetium isotopes were measured by monitoring γ and β radiation. Isotopic equilibration was achieved after 50 to 60 minute contact between the solution and the anion exchange resin. The order of adsorption capacity for technetium from NaNO_3 solution is as follows: AV-17 > AV-18 > EDE-10P > AV-16. The AV-17 anion exchange resin extracts technetium from weakly acidic,

Card 1/2

L 53003-65

ACCESSION NR: AP5010840

neutral, and basic concentrated solutions of NaNO_3 , from solutions of HCl of any concentration, and also from 6 to 7 molar solution of H_2SO_4 and from 3 to 4 molar solution of HNO_3 . Because of small adsorption of technetium from perchlorate solutions, these solutions can be useful in desorbing technetium from the anion exchange resin. All technetium can be desorbed from a resin to a 1.5 to 2 molar aqueous solution of HClO_4 . Adsorption of technetium on strongly basic anion exchange resins is reversible. High sorptivity of TcO_4^- ions is due to small hydration of these ions. "The authors thank G. P. Kolosova for supplying samples of the anion exchange resins." Orig. art. has: 2 figures.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 03Dec60

ENCL: 00

SUB CODE: GC, NP

NO REF SOV: 003

OTHER: 005

Card 2/2

DEDKOV, Yu.M.; RYABCHIKOV, D.I.; SAVVIN, S.B.

Assortment of reagents for the photometric determination of
zirconium. Zhur. anal. khim. 20 no.5:574-584 '65. (MIRA 18:12)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.
Vernadskogo AN SSSR, Moskva. Submitted May 4, 1964.

RYABCHIKOV, D.I. [deceased]; MAROV, I.N.; DUBKOV, Ya.N.; BELYAYEVA, V.K.;
YEREMAKOV, A.B.

Electron paramagnetic resonance of molybdenum complex compounds.
Dokl. AN SSSR 165 no.4:842-844 D '65.

(MIRA 18:12)

1. Institut geokhimi i analiticheskoy khimii im. V.I.
Verbitskogo AN SSSR. 2. Chlen-korrespondent AN SSSR (for
Lyubimukov).

RYABCHIKOV, L.I. [condensed] MAROV, I.N.; DUBROV, Yu.N.; BELYAYEVA, V.K.;
YERMAKOV, A.M.

Stopped complex-forming reactions studied by the electron
paramagnetic resonance method. Dokl. AN SSSR 166 no.3:623-
626 Ja '66. (MIRA 19:1)

1. Institut geokhimi i analiticheskoy khimii im. V.I.
Vernadskogo AN SSSR. Submitted July 19, 1965.